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The Winter of NFV: The Missing Ingredient for Success

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There are indications that we have entered the Winter of NFV. This is occurring because the CSP's and their associated large vendors are trying to implement NFV, but they are missing a key ingredient. What is needed is end-to-end visibility of the entire network. The way to provide it is through innovative orchestration software.

The problem is most people are still operating from a mechanical mindset, and software is fundamentally different from mechanical machines. To be successful today, CSPs must move away from the mechanical mindset. To do so, they must recognize the following: software grows organically, and software innovation comes from small groups, such as start-ups and some maverick groups within large organizations. These small, innovative groups must be supported through paid efforts that tie to their incremental milestones. As the innovative software matures, the small groups need to be able to move the software into large organizations for large-scale deployment and support.

Success through this new mindset will not only realize the potential efficiency benefits of NFV, it will cut the Gordian knot of out-of-control operations costs, while providing the foundation for service agility needed for success in the 21st Century.

Leaves Falling

With 20/20 hindsight, we can see that the Winter started approximately 18 months ago. What at first seemed to be isolated instances have now become a recognizable pattern: large NFV efforts by both CSPs and their vendors started with great promise, but have since started to be shut down. In all fairness, it should be pointed out that in the normal course of system turnover, some isolated VNFs are replacing PNFs, albeit as plug replacements. However, they are static in that they are not part of a dynamic management system with efficiency and security implications. As such, they are not contributing to the realization of the larger NFV vision — the vision that is, in fact, running into some trouble.

It started with Telecom Italia shutting down its NFV group, causing significant impacts on its staff.

Then, HPE's effort at Telefonica failed. Telefonica has taken the position that the NFV transition is difficult, will involve many missteps and failed projects, but the company is committed to a long haul effort.Although, last year it shut down one effort, this year it has started another effort. There are indications that this year's effort is not proceeding as quickly as desired. But Telefonica senior executives deal with the situation by controlling expectations, and that is an approach worthy of credit, as Telefonica is trying to break out of the mechanical mindset, and is acknowledging it is tough to come all the way out of it.

Possibly as a result of the Telefonica experience, the HPE NFV group was reorganized into the HPE general Telecom group shortly after the Telefonica experience. Just before the reorganization was announced, a senior executive in the HPE NFV Group speaking at the Telecom Council meeting in Palo Alto California started talking about how virtualized functions being in software made them inherently less reliable and that CSPs had to change their expectations. This may point to the lack of fundamental innovation in software needed to meet the idea of Telco scale, complexity, volatility, and reliability — achievable only with innovative software.

Very recently another European major CSP dramatically scaled back its NFV activities. After a large multi-year effort with both a large internal team and external large vendors, it first moved away from a plan to have one NFV data center for all of Europe to a plan for three data centers. Now, the carrier is closing those three data centers and seeking buyers for them., and, changing leadership of the internal team. It also is postponing the virtualization of mobile voice service for approximately five years, and instead challenging the existing team to make just one NVF implementation work by the end of this year.

While writing this article, news came in about HPE's shutting down its SDN product line, a 10-percent layoff, not to mention unclear comments about NFV. This development in conjunction with the move to split HPE's software businesses while merging with MicroFocus is raising uncertainty in some circles.

Other large vendors are showing signs of stress as well. The Ericsson financial situation has been widely reported. Recently well-documented news of a 25-percent staff reduction at Ericsson began to circulate. Not so widely reported has been the similar financial difficulties of the Chinese major vendors and similar staff reductions by them.

Pattern

A highly placed friend in the technical organization of a major vendor wonders if this is just the "slough of despond" that follows the "peak of hype", and in time all will be well. It is certainly true that NFV has been over hyped. Following the first cycle of Telefonica NFV trouble, notable early stage NFV start-ups failed, and there was uncertainty in the larger vendor community, the feeling at the mid-year 2016 NFV conference in San Jose was worried and depressed. The feeling this year — just a few months ago — at the same conference was much more optimistic. Then, the bad news started rolling in. If it had just been the Telecom Italia pull back, it could have been written off as the slough of despond, but this is something more serious.

Another industry analyst has been very vocal recently saying that the problem is standards. This argument states that if the industry just made the right detailed standards about how all the virtual components interfaced, all would be fine. This highlights the problem.

In the mechanical technology mindset and associated set of habits, one creates detailed standards so that all the gears fit together. Then, you specify in detail a large machine. You buy the machine; install it; oil it every once in a while; and run it for 50 years. Software doesn't work that way.

For conventional software, the large established vendors try to maintain significant proprietary portions of their products. They do this to differentiate their products, value price, and try to lock in their customers. So, for example, 3GPP SA 5 after more than 100 meetings (~4 per year) have at most standardized 40 percent of the North Bound Interface from the element management system (EMS), leaving 60 percent or more proprietary. At the same time, different standards groups rising out of different layers and/or generations of technology create overlapping and competing

standards.

This is not to say that improvements in standards cannot help. Off and on, over the last couple of years, there have been attempts by the leading telco-focused standards groups to cooperate on trying to create some common data models, or ways of translating between the existing ones. This could be helpful. But fundamentally, standards cannot solve the mechanical mindset and the problems that flow from it.

So the events of the last couple of years show the mechanical mindset and associated habits leading CSPs and their large vendors to try to implement NFV while missing a key ingredient.

Obtaining the Missing Ingredient

The missing ingredient for successful NFV is innovative orchestration software. Innovative software comes from the aformentioned small groups — start-ups and maverick groups in large companies. And end-to-end multi-vendor, multi-domain, orchestration requires fundamental innovation in software architecture. NFV itself requires innovation in translating the Cloud technology developed in ISPs and enterprises to CSPs. That is, innovative ways for “Cloud Natives” to work productively with “Telco Natives."

Our industry has been unable to make progress in NFV because to do so, it must change these old well-established habits. To make the change needed, we have to break these habits and establish new ones that are productive in the world as it is today. This has to be done jointly by the CSPs and the vendor community.

The goal is the creation of an ecosystem that generates innovative software that meets the needs of CSPs today, and as the industry continues to evolve. A key part of this objective has to be to create an environment where both vendors and CSPs can prosper. In other industries that have gone through a similar process this cooperation of competing companies to build such an ecosystem has been called “co-opetition” that is a concatenation of “cooperation” and “competition”.

This ecosystem has to be built by CSPs following three fundamental principles:

- Software grows organically – give it time and a suitable environment.
- Innovation comes from small groups (start-ups and some maverick groups in large vendors) — work with them in paid efforts with incremental milestones.
- As the software matures, help the small groups to move it into large organizations for large-scale deployment and support.

By following these principles, CSPs can change their procurement practices. They can spend relatively small amounts of money with vendors developing software systems and trial and test a variety of these systems. That is, have a process with incremental steps and budgets for these incremental steps that move software from lab test to very small trial, to field trial, to small deployment, etc. There has to be budgets for each of these steps, and an organizational process that doesn’t have artificial barriers between steps. In doing so, everyone needs to recognize that there may be failures and that there is value in the associated learning process (“fail fast”).

These funded test/trial activities can also have a public demonstration aspect, but should not be organized as unpaid PoCs (Proof of Concepts). The purpose of the public demonstrations should be to help the ecosystem grow and develop.

Vendors need to recognize that in today’s technical world, software innovation happens in small groups (small start-up companies, and sometimes maverick groups in large companies). Therefore, the large established vendors have to embrace their role as building large-scale deployment capability based on the innovations that come from these small groups.

In so doing the Telco industry can move from the mechanical mindset to the organic approach that innovative software requires.

Winter is coming

As the global economy continues to move towards the top of the business cycle, some Telcos are seeing quarterly increases in revenues and at least somewhat stable profits. While the vendor financial situation is not so good. The Ericsson financial situation has been widely reported. Not so widely reported has been the financial difficulties of the major Chinese vendors.

If the above efforts are not undertaken soon, as the business cycle changes and 5G is fielded, the Telco/vendor positions may reverse with Telco's in financial trouble. If the mechanical habits of both change, it is possible to have an ecosystem where Telco's and vendors have a sustainable financial position and society at large gets the communications services that are more and more critical with each passing day.